APPARATUS FOR VIBRATING SEATS

This application is a continuation of application Ser. No. 08/358,248 filed Dec. 19, 1994, now abandoned, which is a divisional application of Ser. No. 08/194,356 filed on Feb. 10, 1994, now abandoned, which is a continuation-in-part application of Ser. No. 07/987,481 filed Dec. 4, 1992, now U.S. Pat. No. 5,348,370.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to an apparatus used for vibrating a driver's seat of automobiles, or the like in order to keep a driver alert and to prevent a driver from dozing during driving.

2. Description of the Relevant Art

A variety of apparatus have been proposed to keep a driver alert and to prevent a driver of automobiles or the like, from dozing during driving. Such apparatuses usually comprise a sensor for sensing that a driver has started to doze and means for alerting or wakening a driver by receiving a signal from a sensor. For example, there is a sensor which senses that a driver has started to doze by sensing the number of times the driver nods per unit time or the time for leaning one's head forward, and the like, because a driver nods when the driver starts to doze, and sends a signal to means for alerting the driver. Also, there are means for alerting a driver which operates by receiving the signal, and alerting the driver by producing a loud sound in the driver's ear or ears. Therefore, according to this apparatus, if a driver starts to doze, the sensor senses that the driver's head is leaning forward, and actuates the means for alerting or waking up the driver.

However, because the above mentioned apparatus operates only after a driver has started to doze off, the driver may lose concentration, due to drowsiness, when the driver has started to doze, to such a degree that the means for alerting and waking up the driver may not be effective.

Accordingly, the objective of this invention is to provide apparatus for preventing a driver from dozing off by vibrating the seat.

SUMMARY OF THE INVENTION

In order to accomplish the above objective, the apparatus of this invention for vibrating seats comprises a driver's seat and means for vibrating such driver's seat and means for controlling the vibration of such means for vibrating the driver's seat.

As a result of a series of studies of apparatus to effectively prevent dozing during driving, the inventors have discovered that it is too late to prevent accidents when a driver is awaken by a sensor that senses a driver has started to doze. The inventor has discovered that, if a driver's seat is always being vibrated, the driver remains alert, cannot doze off and, as a result, traffic accidents caused by dozing during driving can be completely prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully described and will be better understood from the following descriptions, taken with the appended drawings, in which:

FIG. **1** is a side view of one embodiment of the present invention;

FIG. **2** is a top plan view of the apparatus of FIG. **1** with the driver's seat removed;

FIG. **3** is a side schematic view of an automobile incorporating the invention of FIG. **1**;

FIG. **4** is a vertical sectional view of the vibrator of this embodiment;

FIG. **5** is an enlarged view, partly in section, of the apparatus of FIG. **1**;

FIG. **6** is a top view of the driver's seat and the control panel for control of the apparatus of FIG. **1**;

FIG. **7** is a rear view of the apparatus of FIG. **6**;

FIG. **8** is a side view, similar to FIG. **1**, but showing another embodiment of the invention;

FIG. **9** is a front view, partly in section, of the vibrator arrangement of the embodiment of FIG. **8**;

FIG. **10** is a side view, similar to FIG. **8**, but showing a still further embodiment of the invention;

FIG. **11** is a front view, partly in section of the embodiment of FIG. **10**;

FIG. **12** is a side view, similar to FIG. **10**, showing yet another embodiment;

FIG. **13** is a rear view of the embodiment in FIG. **12**;

FIG. **14** is a side view, partly in section, of still yet another embodiment;

FIG. **15** is a rear view of the embodiment of FIG. **14**;

FIG. **16** is a side view, partly in section, of still a further embodiment, of the invention;

FIG. **17** is a side view, partly in section, of the embodiment of FIG. **16**, with the apparatus in a different position;

FIG. **18** is a side view, partly in section, of a further still embodiment, similar to FIG. **16**;

FIG. **19** is a side view of the apparatus of FIG. **18** with such apparatus in a different position;

FIG. **20** is a side view, partly in section, of still another embodiment of the invention;

FIG. **21** is a side view, similar to FIG. **20**, but with the apparatus in a different position; and

FIG. **22** is a side diagrammatic view, of a still further embodiment of the apparatus of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following are detailed descriptions of the various embodiments.

FIG. **1** shows a side view of the first embodiment of the invention, having a structure for vibrating a driver's seat **1** by a motor **10** installed on the underside of the driver's seat whereby the vibration is transmitted to the driver's seat **1** when the vibration motor **10** is activated. Driver's seat **1** is mounted on base **2** and, as best shown in FIG. **2**, is attached to base **2** by angle fasteners **3** shaped like an L, and which face each other, at a position toward the front and a rear end of base **2**. Stationary plates **1***a*, are fixed, by bolts **4**, on the radial outward slants of said angle fasteners **3** at the front end and the rear end of the base of seat **1**. The other side of angle fasteners **3** are welded on the upper side of base **2**. Vibration motor **10** is fixed with bolts **5** on the underside of base **2**. Output shaft **10***a* of vibration motor **10** extends in a horizontal direction, as viewed from the front of the driver's seat **1** and from the front of automobile **15** shown in FIG. **3**. As shown in FIG. **4**, eccentric loads **13**, comprising fixed load **13***a* and an adjustable load **13***b*, are installed on opposite ends **10***b* of output shaft **10***a*, the direction of rotation being indicated by an arrow in FIG. **1** of vibration motor **10**. The centrifugal force caused by eccentric loads